It is initially noted that an Information Disclosure Statement citing seven references was filed on July 19, 2000. At this time, acknowledgment of consideration of the references cited on that Information Disclosure Statement has not been made. Applicants respectfully request that it be clearly indicated on the record that the Information Disclosure Statement has been considered, and thereby it is respectfully requested that an initialed PTO-1449 form accompanying that Information Disclosure Statement be provided in response to the present amendment.

Claims 1-31 are pending in this application. Claims 5-8 and 18-31 stand withdrawn from consideration. Claims 1, 4, 11, and 13 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. 5,999,345 to Nakajima et al. (herein "Nakajima") in view of U.S. 5,671,077 to Imakura et al. (herein "Imakura"). Claims 11-17 were rejected under 35 U.S.C. § 112, first paragraph. Claims 9 and 10 were rejected under 35 U.S.C. § 103(a) as unpatentable over Nakajima. Claims 2 and 3 were objected to as dependent upon a rejected base claim, but were noted as allowable if rewritten in independent form to include all of the limitations of their base claim and any intervening claims.

Addressing first the rejection of Claims 11-17 under 35 U.S.C. § 112, first paragraph, that rejection is traversed by the present response.

Each of Claims 11-17 was rejected as the recitation to the "light beam restricting unit" appeared to contradict with Claim 9. In response to that rejection each of Claims 11-17 no longer recites "a light beam restricting unit", but instead now consistently recites "said aperture". The amendments to Claims 11-17 are believed to address the rejections thereto under 35 U.S.C. § 112, first paragraph.

Addressing now the rejection of Claims 1, 4, 11, and 13 under 35 U.S.C. § 103(a) as unpatentable over Nakajima in view of Imakawa, and the rejection of Claims 9 and 10 under

35 U.S.C. § 103(a) as unpatentable over Nakajima, those rejections are traversed by the present response.

Claim 1 is amended by the present response to further recite that the "light beam restricting unit is situated between said light source and said polygon mirror to shape the light beams before the light beams enter said scan lens that forms the images". Independent Claim 9 is also now similarly amended. Such features recited in independent Claims 1 and 9 are believed to clearly distinguish those claims over the applied art.

Imakawa discloses in Figure 14 an aperture 22 by which "the beam diameter of each laser beam can be made to be the same dimension".[2] That aperture 22, however, does not meet the claim limitations, particularly with respect to the positioning thereof. That is, the aperture 22 in Imakawa is situated between the anamorphic lens 21 and the light receiving surface 13A. Thus, the aperture 22 is situated at a position between the lens that forms the images and the surface where the images are formed, and such a lens that forms the image corresponds to the scan lens recited for example in Claim 1.

In such a way, if one of ordinary skill in the art was to combine the teachings in Imakawa as to the aperture 22 with the scanning apparatus of Nakajima, a resulting configuration would have an aperture between the scan lens and the image forming surface, as that is what Imakawa teaches. Such a structure would not meet the Claim 1 limitations as such a structure would not position an aperture ***before*** a scan lens, as required in independent Claims 1 and 9.

Also, attention is directed to the fact that Imakawa encourages the provision of the aperture near the focus plane F to make diameters of the laser beams uniform.[3] That results

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[2]Imakawa at Figure 14 and at column 10, lines 16-17.

[3]Imakawa at column 10, lines 19-25.

because Imakawa does not provide any mechanism that makes the light beams cross each other. As there is no such mechanism in Imakawa, the aperture 22 needs to be positioned near the focus plane F to ensure a uniform diameter of each laser beam.

Absent a teaching or suggestion of a beam-crossing mechanism, Imakawa at most discloses a provision of an aperture 22 at a position after an anamorphic lens 21. To provide an aperture for a beam shaping purpose between a light source and a polygon mirror at a position somewhere before the scan lens, light beams would have to cross each other, which is neither taught nor addressed in Imakawa.

In such ways, no teachings of Imakawa and Nakajima, or Nakajima individually, meet the limitations recited in independent Claims 1 and 9, and the claims dependent therefrom. Thus, those claims patentably define over the applied art.

By the present response, Claim 2 is also amended to be rewritten in independent form, to recite subject matter indicated as allowable in the outstanding Office Action.

As no other issues are pending in this application, it is respectfully submitted that the present application is now in condition for allowance, and it is hereby respectfully requested that this case be passed to issue.

Respectfully submitted,

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IN THE CLAIMS

--1. (Amended) A multibeam scan apparatus comprising:

a light source having semiconductor laser diodes and coupling lenses arranged in a main scan direction, the semiconductor laser diodes being positioned so that light beams emitted by the semiconductor laser diodes substantially cross each other at a point;

a light beam restricting unit shaping the light beams from the laser diodes through the coupling lenses so that the light beams have a given spot size, the light beam restricting unit being positioned close to the point;

a polygonal mirror; and

a scan lens causing the light beams reflected by the polygonal mirror to form images on a scanned surface, wherein said light beam restricting unit is situated between said light source and said polygonal mirror to shape the light beams before the light beams enter said scan lens that forms the images.

2. (Amended) A multibeam scan apparatus [as claimed in claim 1,] comprising:

a light source having semiconductor laser diodes and coupling lenses arranged in a main scan direction, the semiconductor laser diodes being positioned so that light beams emitted by the semiconductor laser diodes substantially cross each other at a point;

a light beam restricting unit shaping the light beams from the laser diodes through the coupling lenses so that the light beams have a given spot size, the light beam restricting unit being positioned close to the point;

a polygonal mirror; and

a scan lens causing the light beams reflected by the polygonal mirror to form images on a scanned surface;

wherein:

the light beam restricting unit is incorporated into each of reflection surfaces of the polygonal mirror; and

the spot size of the light beams incident to the polygonal mirror is larger than a size of each of the reflection surfaces in at least the main scan direction.

9. (Twice Amended) A multibeam scan apparatus comprising:

a light source emitting light beams, outgoing beam directions in which the light beams travel being arranged so as to cross each other at a point;

a deflection unit deflecting the light beams;

an optical unit causing the light beams from the deflection unit to form images on a scanned surface; and

an aperture situated close to said point and arranged to shape the light beams, wherein said aperture is situated between said light source and said deflection unit to shape the light beams before the light beams enter said optical unit that forms the images.

11. (Amended) The multibeam scan apparatus as claimed in claim 10, [further comprising a light beam restricting unit shaping] wherein said aperture shapes the light beams so as to have a given spot size, the [light beam restricting unit] aperture being positioned close to said position.

13. (Amended) The multibeam scan apparatus as claimed in claim 9, [further comprising a light beam restricting unit shaping] wherein said aperture shapes the light beams so as to have a given spot size, the [light beam restricting unit] aperture being positioned close to a position at which the light beams cross each other.

14. (Amended) The multibeam scan apparatus as claimed in claim 11, wherein the [light beam restricting unit] aperture is incorporated into deflection surfaces of the deflection unit, and the given spot size of the light beams is larger than a size of each of the deflection surfaces.

15. (Amended) The multibeam scan apparatus as claimed in claim 13, wherein the [light beam restricting unit] aperture is incorporated into deflection surfaces of the deflection unit, and the given spot size of the light beams is larger than a size of each of the deflection surfaces.--